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VOL. 8 No. 2

JANUARY 10, 1958

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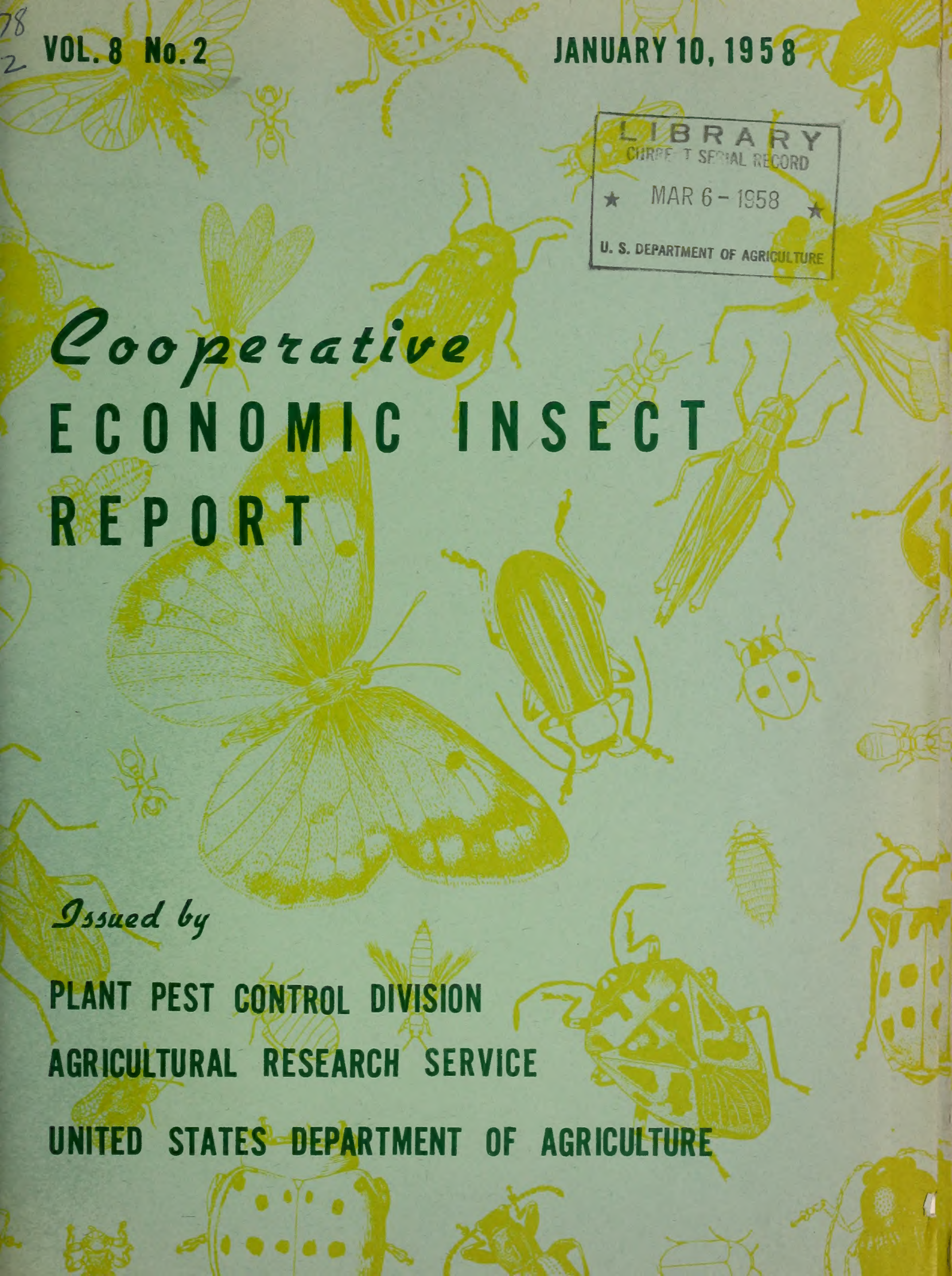

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 8 January 10, 1958 Number 2

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

BOLL WEEVIL hibernation counts higher in Florence County, South Carolina, area than last year. Reports from other South Carolina, North Carolina and Virginia areas. (p. 16).

SPRUCE BUDWORM outbreak most important forest insect problem in Minnesota. (p. 16).

Distribution of ALFALFA WEEVIL in United States. (p. 18).

SUMMARY OF INSECT CONDITIONS - 1957 - North Dakota (p. 19), Wyoming (p. 22), Montana (p. 23).

MORMON CRICKET adult survey - fall 1957. (See end of book).

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Reports in this issue are for the week ending January 3 unless otherwise designated.

WEATHER OF THE WEEK ENDING JANUARY 7

The week's weather highlights included 3 storms and 1 cold wave. The first storm which developed in the central Mississippi Basin the last day of 1957, and moved northeastward across the Great Lakes on January 1, 1958, produced light to heavy snow and some sleet along its path and also over the Northeast. Snowfall ranged up to 7 inches in a belt from Nebraska to the Great Lakes and in northern New England, but amounts of 1 to 2 feet were reported from local areas along Lakes Erie and Ontario. A storm moving up from Cuba produced 3 to 5 inches of rain in southern Florida on January 2 and 3. This was one of the worst winter storms of record along the southeastern coast where sustained northeasterly winds of 40 to 50 m.p.h., and gusts up to 70 m.p.h., were reported. Wind and rain caused considerable crop and property damage on land and damaged many boats along the shore. A weekend storm in Texas and eastern New Mexico brought flood-producing rains totaling 6 inches or more to the lower Rio Grande and Coastal Bend sections of Texas and up to 7 inches or more of snow to extreme western Texas and eastern New Mexico. First felt in the Far West on December 31, cold air covered the entire country by January 1 and maintained below-normal temperatures east of the Rockies most of the remainder of the week. Subzero minima occurred on several days in extreme northern areas east of the Rockies, and on January 1 were recorded as far south as northeastern Kansas and northern Missouri in the mid-continent area. Freezing occurred as far south as northern Florida, New Orleans, La., and Victoria, Tex. Temperatures for the week were unseasonably low east of the Great Plains, but varied in the Far West from much above normal in Montana east of the Divide to well below in the northern Great Basin. Precipitation generally was very light, with moderate to heavy amounts limited mostly to southern Florida, the extreme lower Great Plains, the central and north Pacific coast, and to local areas from the central Great Plains through the Great Lakes and Northeast. Frozen ground permitted resumption of harvesting operations in parts of the Corn Belt. Ice on lakes in Wisconsin is now 12 to 18 inches thick in the north and 5 to 8 inches in central portions. On January 6, measurable snow covered extreme western Texas and much of eastern New Mexico, much of eastern Nebraska, eastern Iowa, and northern Illinois, areas where the ground was bare at the end of the previous week. Depths increased in the Great Lakes region, and now range up to 24 inches at Houghton, Mich. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - OKLAHOMA - Light, scattered populations in volunteer small grains, Osage and Pawnee Counties. Occurring only occasionally in planted grain. (Coppock, Dec. 28). Averaged 2-10 per linear foot of row on volunteer oats and barley in isolated fields, Major and Garfield Counties. (Owens, Jan. 4).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Up to 30 per linear foot of row in oats, Pawnee and Osage Counties. Lighter numbers in other small grains, (Coppock, Dec. 28). Light, scattered populations (less than 10 per linear foot) from barley and wheat, Logan County. (Coppock, Jan. 4).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Light numbers in barley and wheat, Pawnee and Osage Counties. (Coppock,Dec. 28).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Light numbers found in barley and wheat, Pawnee and Osage Counties, Dec. 28. From 30-100 per linear foot in one barley field, Logan County, Jan. 4. (Coppock).

GRASSHOPPERS - CALIFORNIA - Medium infestation of Esselena vanduzeei nymphs reported from red-stem filaree about 7 miles south of Coalinga, Fresno County. (Cal. Coop. Rept.).

EUROPEAN CORN BORER (Pyrausta nubilalis) - VIRGINIA - A density survey in 20 northern and southwestern counties averaged 117 borers per 100 stalks, with 63 percent of stalks examined being infested. (Morris).

ARMY CUTWORM (Chorizagrotis auxiliaris) - OKLAHOMA - A field of wheat, previously planted to alfalfa, averaged 1-2 larvae per linear foot, Major County. (Owens).

CHINCH BUG (Blissus leucopterus) - MISSOURI - Fall survey of 37 counties showed ratings of very severe in 6 counties, with 2,121-5,248 bugs per square foot; severe in 8 counties, with 1,002-1,875 per square foot; threatening in 5 counties, with 524-648 per square foot; light in 3 counties, with 305-460 per square foot; and non-economic in 15 counties, with 6-246 per square foot. (Thomas). OKLAHOMA - Fall survey shows average of 2,040 bugs in hibernation per square foot in Noble County, 1,989 in Kay County (Dec. 28), 2,814 in Pawnee County and 2,540 in Osage County (Jan. 4). (Coppock).

HESSIAN FLY (Phytophaga destructor) - VIRGINIA - Heavily damaged winter grains sown as cover crops on some farms, Pittsylvania County. (Morris).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Populations remain low in all areas; negative in some fields throughout State. (Coppock, Dec. 28). Populations range 0-50 per square foot of alfalfa crown, Logan County. (Coppock, Jan. 4).

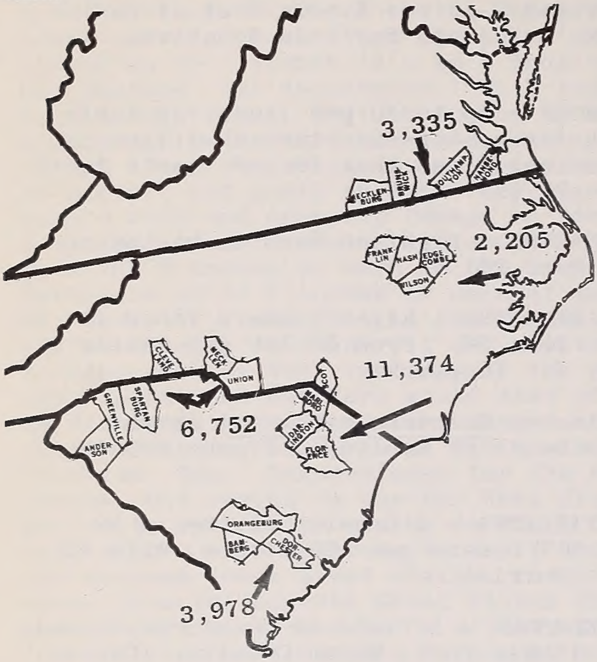
FRUIT INSECTS

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - FLORIDA - No new finds in State since November 26, 1957. (Bittner, Dec. 20).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Limited infestation in Sonora, Tuolumne County, reported spreading to neighboring properties. Noticeable but not alarming since only short distances are involved. (Cal. Coop. Rept.).

COTTON INSECTS

Boll Weevil Hibernation Survey in South Carolina, North Carolina and Virginia - 1957. The same five areas in these States were samples from November 13 to December 19 as in the fall of 1956, with 3 samples of 2 square yards each being taken at each of 30 locations (farm sites) per area. Area 1 consisted of Orangeburg, Bamberg and Dorchester Counties, South Carolina, and averaged 3,978 live boll weevils per acre, which is 266 more than in 1956. Area 2, consisting of Florence, Darlington and Marlboro Counties, South Carolina, and Scotland County, North Carolina, averaged 11,374 per acre, 2,639 more than in 1956. Area 3, composed of Anderson, Greenville and Spartanburg Counties, South Carolina, and Mecklenburg, Cleveland and Union Counties, North Carolina, averaged 6,752 live boll weevils per acre, as compared with 6,268 for 1956. Area 4, comprised of Edgecombe, Franklin, Nash and Wilson Counties, North Carolina, averaged 2,205 live boll weevils per acre, which is 2,610 less than in 1956. Area 5, composed of Brunswick, Mecklenburg, Nansemond and Southampton Counties, Virginia, averaged 3,335 live boll weevils per acre, 834 less than in 1956. (Walker, Hopkins, Jernigan).



Averages by Area

PINK BOLLWORM (Pectinophora gossypiella) - OKLAHOMA - Inspection of 27 lint cleaners and 23 gin stands in 18 counties, Dec. 11-17, gave a total of 100 pink bollworms found. Nine counties were negative. Inspection of 15 lint cleaner and 10 gin stands in 12 counties, Dec. 17-24, found a total of 44 larvae. Eight of the counties were negative. (Fed.-State PBW Comm.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A PINE SAWFLY (Neodiprion exitans) - FLORIDA - Larvae on 100 trees per acre of 30 acres of loblolly pine near Lake City, Suwannee County. Intermingled slash pine not affected to Oct. 11. All codominant and intermediate size loblolly trees have been completely stripped. (Merkel, Oct. 11).

PUTNAM SCALE (Aspidiotus ancylus) - MARYLAND - Infesting dogwood at Harmans, Anne Arundel County. (U. Md., Ent. Dept.).

SPRUCE BUDWORM (Choristoneura fumiferana) - MINNESOTA - Current outbreak is most important forest insect problem in State. Populations have increased alarmingly since 1954. Aerial survey showed moderate to heavy defoliation over approximately 660,000 acres of spruce-fir type in northern areas, an increase of some 240,000 acres over 1956 and 580,000 acres over 1955. A control program of 16,000 acres on the Kabetogama Peninsula is anticipated next year. Prospects are that the population will maintain itself or increase markedly in 1958. (Minn. Ins. Rept.).

INSECTS AFFECTING MAN AND ANIMALS

BROWN DOG TICK (*Rhipicephalus sanguineus*) - MARYLAND - Adults found in home at College Park, Prince Georges County. (U. Md., Ent. Dept.).

CATTLE GRUBS - OKLAHOMA - Grubs averaged 16-20 per animal in calves and yearlings, Canadian County, and 4-7 per animal in old cows, Dec. 28. (Howell). Infestation was 4.5 grubs per animal in 86 mature, fat steers examined in a major packing plant in Oklahoma City, Dec. 30. Many dead grubs were noted. (Coppock). Populations averaged 33 per animal in 300 yearling steers in Harper County and 21 per animal in 200 yearlings in Canadian County. Payne County yearling steers averaged 26 per animal. Populations in mature animals in the three countries were much lower. (Howell).

MITES - UTAH - Severely infesting chicken coops on farm at Salina, Sevier County. (Knowlton).

STORED-PRODUCT INSECTS

A SPIDER BEETLE (*Ptinus gandolphei*) - CALIFORNIA - A medium infestation in a bathroom in Tulare County is apparently third record for State. The first record was in Los Angeles County in 1940, no host recorded. The second record in 1955 from Fresno County an old sacks in a warehouse. (Cal. Coop. Rept.).

MISCELLANEOUS INSECTS

BOXELDER BUG (*Leptocoris trivittatus*) - MARYLAND - Causing nuisance by entering homes in Baltimore. (U. Md., Ent. Dept.).

CLOTHES MOTHS - UTAH - Damaged stored woolen clothing and a carpet at Hyrum, Cache County. (Knowlton).

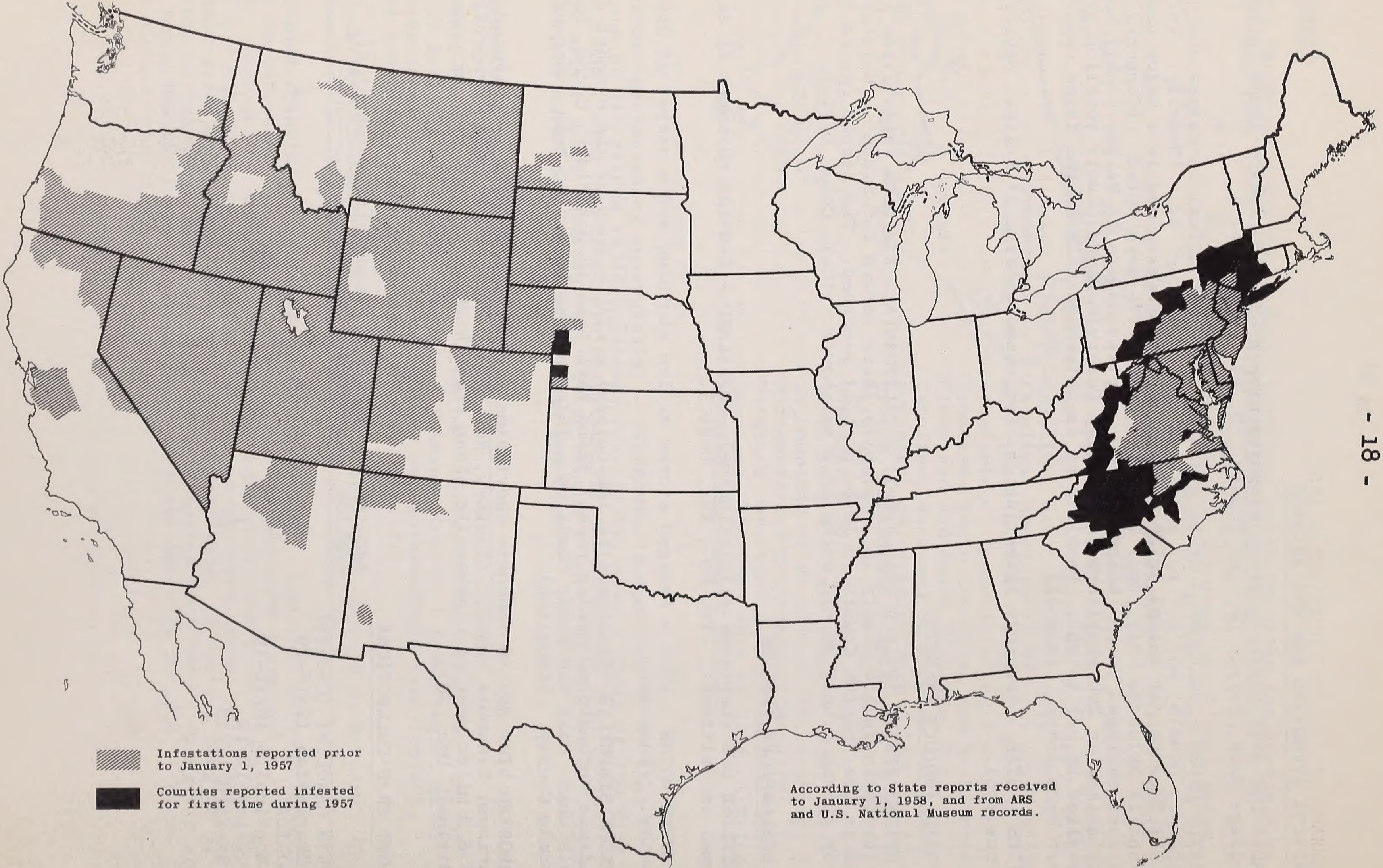
GARDEN SYMPHYLID (*Scutigerella immaculata*) - UTAH - Most of the symphylid infestations encountered during recent years have been in Box Elder, Cache, Davis, Salt Lake, Utah and Weber Counties. Infestations have also been observed in Tooele County. (Knowlton).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - FLORIDA - Collected at Bay Springs, Escambia County. (Youtsey, Nov. 25). Four new infested properties 4.5 to 6.5 miles west of Clarksville along State Highway No. 20, Calhoun County. (Bittner, Dec. 20).

LIGHT TRAP COLLECTIONS

	Agrotis ypsilon	Feltia subterranea	Pseudaletia unipuncta	Trichoplusia ni
SOUTH CAROLINA (County)				
Charleston 12/16-29	32	19	2	5
FLORIDA				
Monticello 12/18-19		3	1	
Quincy 12/16	1			1
Sanford 12/18	6	3		3

DISTRIBUTION OF ALFALFA WEEVIL *(HYPERA POSTICA)*



▨ Infestations reported prior to January 1, 1957

■ Counties reported infested for first time during 1957

According to State reports received to January 1, 1958, and from ARS and U.S. National Museum records.

SUMMARY OF INSECT CONDITIONS - 1957

NORTH DAKOTA

Compiled by Vance V. Goodfellow

Highlights: GRASSHOPPERS, as predicted by 1956 fall surveys, reached outbreak proportions over much of the State in 1957. In general, crop losses were kept at a minimum due to early chemical control of nymphal populations along roadsides, field margins and other places. Insecticidal treatment of rangeland infestations resulted in excellent control. EUROPEAN CORN BORER populations were the highest ever recorded in the State. SIX-SPOTTED LEAFHOPPER population was unusually high during mid-June, and contributed to the first economic incidence in North Dakota of the aster yellows disease in flax. The high incidence of purple top in potatoes was also attributed to this high population. BEET WEBWORM infestations were the first of any consequence since 1950. WHEAT STEM SAWFLY infestations were severe in McLean, Ward, and Mountrail Counties.

Cereal and Forage Insects: The heaviest GRASSHOPPER infestation since the 1930's occurred over most of the State during the 1957 crop season. The egg hatch in western counties was well underway on May 13. First-instar nymphs, 20 to 40 per square yard, of Melanoplus bivittatus and M. bilituratus were common in stubble fields. Roadside counts were as high as 75 to 100 nymphs per square yard. On May 16 the movement of young grasshoppers from stubble to adjacent fallow-planted grains was observed and damage evident. Control measures were begun immediately in these areas to protect the crops. By June 1, the egg hatch was general over the State. However, because of cool, wet weather and heavy plant growth, the hatch of M. bivittatus and M. bilituratus was extended over a long period. The first nymphs of M. femur-rubrum were observed in alfalfa on June 10. The hatch of this species was also extended over a long period.

The control of grasshopper nymphs in field margins and roadsides was stressed after major hatch was completed. This marginal control was practiced widely and was successful in preventing severe crop damage. Sixty percent of the North Dakota counties initiated local roadside spray programs to control grasshoppers. Field spraying of flax to control adult grasshoppers was necessary in many sections after small grains were harvested.

Rangeland grasshopper infestations developed in Golden Valley, Slope, Ransom, and Richland Counties. Dominant species infesting range were Ageneotettix deorum, Melanoplus bilituratus, M. femur-rubrum, M. packardii, and Amphitornus coloradus. A Federal-State-County rancher program was conducted on 9,504 acres in Golden Valley and Slope Counties; 62,721 acres of Federal domain (rangeland) were treated in Ransom and Richland Counties. Exceptional grasshopper control was attained by chemical treatments in these areas. The Federal government treated 400 acres of government-owned land along the Garrison Reservoir in Williams County which was heavily infested with M. bivittatus.

Adult grasshopper surveys completed in early September indicated that infestations in general had diminished, although they may still threaten 1958 crop production over a wide area.

In summary, grasshopper control was carried out on 266,057 acres of roadsides; 62,721 acres of Federal domain (rangeland); 59,100 acres of private rangeland; 162,477 acres of legumes; 939,537 acres of small grain; and 100,400 acres of other crops for a grand total of 1,590,292 acres sprayed to control grasshoppers. It is estimated that this control spraying protected 5,196,280 acres. The estimate of losses from grasshoppers in 1957 is placed at $1,682,000. The estimate of savings resulting from timely control is $17,102,250.

EUROPEAN CORN BORER (Pyrausta nubilalis) - Winter survival of borers was estimated at 80 percent in eastern North Dakota counties. Pupation was complete by June 24. Egg-laying reached peak during the week of July 8 with a heavy hatch of first-generation larvae the week of July 15. Cool weather in June slowed both corn and borer development. Heat during early July speeded corn growth and apparently provided optimum conditions for moth flights and egg-laying. First-generation borers infested from 15 to 96 percent of the stalks. From 20 to 30 percent of the fields surveyed had infestations at levels of 75 percent or above. Borer infestations in Cass, Richland, and Traill Counties averaged 210 borers per 100 plants.

On August 19, nearly 50 percent of the first-generation borers had pupated. Cool, wet weather through the remainder of the month hampered moth emergence and flight. This resulted in an extremely light egg deposition and an unimportant second generation.

Fall infestation surveys conducted in Grand Forks, Traill, Cass, Richland, Sargent, and Ransom Counties showed a 20 percent increase in the number of infested plants compared with 1956 data. Infestations in Cass and Richland Counties showed a 50 percent increase in the number of borers per 100 plants. The corn loss due to European corn borer damage is estimated at 5.4 percent in the six southeastern-counties.

ARMY CUTWORM (Chorizagrotis auxiliaris) - Scattered infestations requiring control were present in western North Dakota. Infestations ranged from 1 to 6 larvae per square foot. Severe damage to alfalfa and flax was observed in several fields. SWEETCLOVER WEEVIL (Sitona cylindricollis) - Heavy feeding in old stands was common but injury to new plantings was not severe. SWEETCLOVER APHID (Myzocallidium riehmi) was present in old stands on May 31 and could be found in all sweetclover fields in eastern North Dakota thereafter. This insect appeared to be less abundant than in 1956. WIREWORMS - Crop damage reports were the lowest in many years. BLISTER BEETLES - Numerous infestations in scattered alfalfa fields and in a few soybean fields were observed. However, little crop damage was reported. WHEAT STEM SAWFLY (Cephus cinctus) - The most severe infestations were observed again this year in McLean, Ward, and Mountrail Counties where an average of 50 percent of the stems were infested. Some fields in Williams, Divide, Burke, Renville, and Bottineau Counties also had heavy infestations. The loss to wheat this year is estimated at 6.5 percent or 1,682,030 bushels. FIELD CRICKETS were unusually abundant in eastern counties. HESSIAN FLY (Phytophaga destructor) - Following several reports received during the summer, a fall survey was made in the southwest counties and infestations in volunteer spring wheat were as high as 6 percent. A cool, wet spring could mean a rather severe outbreak in some areas. Hessian fly has not caused damage to wheat in North Dakota since 1945. Scattered infestations of WHEAT MIDGE (Sitodiplosis mosellana) in Pembina County were mostly light in nature, although several fields showed 16 percent of the heads infested. Scattered larval infestations of THISTLE BUTTERFLY attacking soybeans and sunflowers required control in the Red River Valley area. Many large thistle patches were completely defoliated throughout eastern North Dakota. Unusually high populations of SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) occurred in flax and small grain fields during June. These heavy populations were responsible for transmitting the virus disease aster yellows to flax over a wide area of the State. The incidence of this disease in flax was the highest ever recorded in North Dakota. The percentage of flax plants infested varied widely from field to field with a range from a trace to 50 percent of the plants showing disease symptoms. Scattered larval infestations of BEET WEBWORM (Loxostege sticticalis) in alfalfa, flax, and wheat requiring control occurred in north central North Dakota. First collections of POTATO LEAFHOPPER (Empoasca fabae) were made in alfalfa on July 19 in Richland County. This was nearly three weeks later than the average appearance date for this insect in North Dakota.

Truck Crop Insects: SIX-SPOTTED LEAFHOPPER infestations appeared 10 to 14 days earlier than usual in potato fields. They were abundant on July 8 when up to 22 leafhoppers were collected per 25 net sweeps. These high leafhopper populations together with their early appearance in potato fields, were responsible for the increase of the purple top virus disease of potatoes over previous years. An estimated 6 percent of the six-spotted leafhoppers were viruliferous compared with an estimated average of less than 1 percent in other years. POTATO LEAFHOPPER migration to potatoes occurred the week of July 22. Infestations of moderate intensity were general and were considered to be near normal in abundance. SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) populations were moderate with little damage reported. Control treatments are holding well. Scattered larval infestations of BEET WEBWORM occurred in sugar beet fields in eastern North Dakota beginning the week of July 15. Some control work was done in fields where populations were high. Moths were numerous in the area north of Grand Forks; however, potential infestations did not materialize. The infestation was the first of any consequence since 1950. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) populations were the lowest in ten years. Medium populations of POTATO FLEA BEETLE (Epitrix cucumeris) occurred during the season. Migration to potatoes was later than usual.

Ornamental and Shade Tree Insects: APHID infestations on shade trees, ornamental shrubs, and perennial plants were the heaviest in many years. Cool, damp weather during June allowed populations to increase rapidly and held back development of predators. PINE NEEDLE SCALE (Phenacaspis pinifoliae) infestations on spruce appear to be increasing in eastern North Dakota. SPRUCE NEEDLE MINER (Taniva albolineana) infestations on spruce were widespread. Control measures were necessary in several nursery plantings. Three infestations of BAGWORMS on juniper were reported this season, two from Cass County and the other from Emmons County. This pest has not been reported in the State since 1950.

Insects Affecting Man and Animals: MOSQUITOES - Severe populations developed as a result of above normal rainfall in most sections of eastern North Dakota. Early spring (May to June) populations of Aedes spenceri were troublesome in the vicinity of Grafton and St. Thomas. Aedes vexans was the predominant species from mid-June to September, with populations remaining at high levels throughout the season. Culex sp. were about normal in abundance. Culiseta sp. were not as abundant during the fall. AMERICAN DOG TICK (Dermacentor variabilis) populations were high in eastern North Dakota. HORN FLY (Siphona irritans) was probably the most severe cattle pest during 1957. BROWN-BANDED ROACH (Supella supellectilium)- Several infestations were reported again in 1957. This pest has been known to occur in the State since 1954. CAT AND DOG FLEAS - Numerous reports of basement infestations were received. CAVE CRICKET infestations in basements were numerous throughout the summer.

Stored-Product Insects: CARPET BEETLE infestations in the home were numerous. MITES AND PSOCIDS - Numerous infestations were reported in grains with high moisture content.

SUMMARY OF INSECT CONDITIONS - 1957

WYOMING

Reported by Wyoming Association of Entomologists

Highlights: Most significant factor was result of spring weather conditions, which included an abundance of moisture. The heavy moisture prevented the application of normal control measures for many of the field crop insects and several species increased greatly and high numbers were present to go into hibernation.

Cereal and Forage Insects: GRASSHOPPERS of many species infested nearly a million acres of Wyoming rangeland. Cooperative control was applied to 446,813 acres. Winter wheat damage was severe in restricted areas. MORMON CRICKET (*Anabrus simplex*) was controlled on more than 36,000 acres and damage was held to a minimum. CORN LEAF APHID (*Rhopalosiphum maidis*) was much less prevalent than in 1956, small numbers being found only in barley. ALFALFA WEEVIL (*Hypera postica*) was the worst that it has been in several years because of lack of control during the wet spring. High counts gave 72 larvae in 10 sweeps. LYGUS BUGS (*Lygus* spp.) were equal to 1956 but appeared later. First-generation WEBWORMS were heavy in all crop areas. Apparently some factor prevented the second generation from increasing in number and causing damage. CLOVER ROOT CURCULIO (*Sitona hispidula*) was numerous except in fields sprayed for alfalfa weevil. Damage was not thought to be severe. CORN EARWORM (*Heliothis zea*) was not reported as being severe in any area. ARMYWORM (*Pseudaletia unipuncta*) was reported only in one county (Fremont) where 1000 acres were sprayed for control. VARIEGATED CUTWORM (*Peridroma margaritosa*) was reported in Park County. ARMY CUTWORM (*Chorizagrotis auxiliaris*) damaged wheat in Platte County. *Tortrix pallorana* was heavy on seed alfalfa in central part of State. No satisfactory control was found. WHEAT CURL MITE (*Aceria tulipae*) was prevalent near Torrington and Pine Bluffs. One field near Hawk Springs was seriously damaged by wheat streak mosaic. Other fields were little damaged. SPOTTED ALFALFA APHID (*Therioaphis maculata*) has not yet been found in the State.

Truck Crop Insects: POTATO PSYLLID (*Paratrioza cockerelli*) was heavy in all potato-growing areas. Much damage was done in spite of the controls applied. BEET WEBWORM (*Loxostege sticticalis*) required control for first generation. Second generation did not develop. EUROPEAN EARWIG (*Forficula auricularia*) was taken at Laramie, Albany County, during the year. This is a first record for the county. SLUGS were bothersome in a few home gardens.

Forest, Ornamental and Shade Tree Insects: MITES were present and damaging on many ornamental evergreens. EUROPEAN ELM SCALE (*Gossyparia spuria*) was very bad and is increasing in all areas where elms are grown. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) severely damaged golden willow and ash in shelterbelt plantings. *Bibio* spp. larvae were an annoyance in some lawns. A COCKSCOMB APHID was very heavy in elms. SCURFY SCALE (*Chionaspis furfura*) badly infested several species of shrubs. PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) was very bad in many areas. All scales on ornamentals appear to be increasing. A COTTONWOOD APHID was very heavy on poplars in Laramie.

Man and Animal Pests: MOSQUITOES were worse than for several years in most areas. Several towns and cities sprayed for control. SHEEP KED (*Melophagus ovinus*) was normal on untreated sheep. A WOOL MAGGOT was heavy because of wet weather and the consequent delay in the shearing schedule. CATTLE GRUBS were present in usual large numbers. Losses totaling $2,000,000 were estimated. CATTLE LICE were present in most herds, making control necessary. ANTS as household pests were quite numerous in several areas.

Beneficial Insects: HONEY BEE (*Apis mellifera*) production of honey was down. AN ALKALI BEE, which is the most important alfalfa pollinator, was two to three weeks late in emerging. This resulted in poor pollination in seed-producing areas. *Collops vitattus* was very numerous in alfalfa fields in central part of State.

SUMMARY OF INSECT CONDITIONS - 1957

MONTANA

Reported by George Roemhild

Highlights: GRASSHOPPERS were the number one insect problem in Montana during 1957. Both cropland and rangeland species were present in high numbers over many localized areas in the State. Cropland species, mainly *Melanoplus bivitattus* and *M. bilituratus*, were present in the northeastern part of the State and control measures were taken on over 500,000 acres. Rangeland areas infested included spots in the northwestern, southwestern, central, and southeastern areas. Abundant rains during May and June produced an outstanding crop of forage in many areas and consequently the percentage damaged in these areas was not high even though large numbers of grasshoppers were present. Beginning about May 15, PEA APHID (*Macrosiphum pisi*) started to build up in alfalfa fields in the eastern part of the State. By the 15th of June many alfalfa fields were heavily infested and control measures had to be taken in many places.

Cereal and Forage Insects: ARMY CUTWORM (*Chorizagrotis auxiliaris*) was present in rather large numbers in the central counties with scattered infestations in northern, southern and eastern areas. The ARMYWORM (*Pseudaletia unipuncta*) was reported only from one locality, in the eastern part of the State, where it did considerable damage to oats. Damage from the PALE WESTERN CUTWORM (*Agrotis orthogonia*) was down from 1956 in that infestations were found only in local central areas. Two infestations of WHEAT HEAD ARMYWORM (*Faronta diffusa*)were reported during 1957; one from the north central part and one from the eastern part of the State. GARDEN WEBWORM (*Loxostege similalis*) was reported from the southeast and from scattered spots through the central counties on alfalfa. FLEA BEETLES of various species appeared to be down in numbers this year and only scattered reports of forage crop damage were made. A CARRION BEETLE (*Silpha bituberosa*) severely damaged alfalfa in Big Horn County. BLISTER BEETLES were extremely abundant during the year and scattered damage from all areas was reported on alfalfa and various ornamentals. The species involved were *Pyrota mylabrina*, *Lytta cyanipennis*, *L. stygica*, and *Linsleya sphaericollis*. A TIPULID (species unknown) was reported damaging alfalfa in Sanders County during August. LYGUS BUGS (*Lygus* spp.) appeared to be up during 1957 and damage was reported from all areas. ALFALFA WEEVIL (*Hypera postica*) continues to be Montana's number one alfalfa pest and control measures are taken accordingly each year. A new area of infestation was reported this year from the Gallatin Valley. WIREWORMS (various species) appeared to be up in most of the grain-growing sections of the State this year. A WHEAT APHID (*Brachycolus tritici*) was present in scattered spots in the north central part of the State. SAY STINK BUG (*Chlorochroa sayi*) was reported from the northeastern area in August on wheat. The BUMBLE FLOWER BEETLE (*Euphoria inda*) damaged corn during September in the central and south central areas. CLOVER LEAFHOPPER (*Aceratagallia sanguinolenta*) damaged barley during June in Chouteau County. A LEPIDOPTEROUS LARVA (*Callarctia* sp.) was found damaging spring wheat in Judith Basin County on June 16. MEADOW PLANT BUG (*Leptopterna dolabratus*) damaged crested wheatgrass fields in Rosebud County on June 6.

Fruit Insects (Reported by D. R. Merkley, Horticultural Branch Station, Corvallis): CODLING MOTH (*Carpocapsa pomonella*) was present in all apple-growing areas. The EYE-SPOTTED BUD MOTH (*Spilonota ocellana*) was present in greater numbers in Ravalli County than in previous years. Heavy infestations of PEAR LEAF BLISTER MITE (Eriophyes pyri) occurred in orchards where control measures were not applies. The APPLE APHID (Aphis pomi) occurred in very severe infestations, seemingly more difficult to control. Several generations of this insect were present. BLACK CHERRY FRUIT FLY (Rhagoletis fausta) populations were about normal, although infestations were found in plantings where no control measures were applied. BLACK CHERRY APHID (Myzus cerasi) was present in all cherry-growing areas with severe damage where no control measures were made. A PLUM NURSERY MITE (Vasates fockeui) populations were down from previous years. PEAR-SLUG (Caliroa cerasi) did severe damage to trees which were not sprayed. Complaints concerning CURRANT FRUIT FLY (Epochra canadensis) came in from scattered areas. RASPBERRY ROOT BORER (Bembecia marginata) did considerable damage to plantings in Ravalli and Missoula Counties. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) caused severe damage to one small planting in one area of Ravalli County.

Truck and Garden Insects: CORN EARWORM (Heliothis zea) was abundant in most gardens and commercial plantings in the southern, eastern, and western parts of the State. EUROPEAN EARWIG (Forficula auricularia) is spreading gradually throughout southern and western portions and is important in home gardens and commercial plantings throughout this area. BEET WEBWORM (Loxostege sticticalis) was present in the south central area in scattered local infestations. Only a few POTATO PSYLLIDS (Paratrioza cockerelli) were found furing 1957. WHITE GRUBS (Phyllophaga sp.) apparently are becoming more important in gardens and vegetable plantings.

Insects of Ornamentals: SPRUCE NEEDLE MINER (Taniva albolineana) was not as abundant in 1957 as in previous years. SPRUCE BUDWORM (Choristoneura fumiferana) attacked ornamental spruce plantings in many parts of the State. These attacks were probably the result of heavy spruce budworm infestations in surrounding forest land areas. A PINE WEEVIL (Pissodes schwarzi) caused considerable damage to terminal growth of pines in the western part of the State. A PINE TIP MOTH (species unknown) attacked pines in Yellowstone County. PINE NEEDLE SCALE (Phenacaspis pinifoliae) was not as abundant but did show up in localized infestations, especially in the central area. A JUNIPER BORER (Phloeosinus dentatus) continued to attack juniper for the second year in Powder River County. COOLEY SPRUCE GALL APHID (Chermes cooleyi) is becoming more abundant and inquiries have been received from all parts of the State. A WILLOW LEAF GALL, caused by Pontania sp. was prevalent in the northern and western areas. POPLAR VAGABOND GALL (Mordwilkoja vagabunda) was common on cottonwoods, especially in the north and east. The larvae of the MOURNING- CLOAK BUTTERFLY (Nymphalis antiopa) caused severe defoliation of poplars and elm in the north central and eastern parts of the State. LILAC LEAF MINER (Gracilaria syringella) was in outbreak proportions and did damage locally to lilacs in southern, central and western areas. ELM LEAF APHID (Myzocallis ulmifolii) continues to be a pest wherever elms are planted. A COTTONWOOD STEM GALL MITE (Eriophyes sp.) has done considerable damage to many cottonwood plantings in north central and eastern sections. POPLAR PETIOLE GALL APHID (Pemphigus populi-transversus) was very abundant and caused concern in the central, eastern, and in localized western areas. A COTTONWOOD LEAF MINER was noted in the north central area in local severe infestations. COTTONWOOD LEAF BEETLE (Chrysomela scripta) was in its second year of abundance in the eastern and north central counties. Many of the shelter belt areas which included ash, cottonwood, and boxelder, were very heavily damaged during the past year by carpenterworms. BOXELDER APHID (Periphyllus negundinis) was very abundant over most of the state wherever boxelders are growing. ASH PLANT BUG (Neoborus amoenus) was apparently down in number and only scattered local infestations were noted in the north central part of the State. ROSE GALLS caused by Diplolepis sp. have been very common the last two years. A LECANIUM SCALE (Lecanium corni or close to this species) was very abundant this year on caragana and rose in northern and eastern areas. A GREENHOUSE FLATWORM (Bipalium sp.) was reported for the first time from a greenhouse in Helena. A GLADIOLA THRIPS was more abundant than usual during this season. Two other pests, which were numerous this year were COTTONY-CUSHION SCALE (Icerya purchasi) found in the Kalispell area and at Corvallis and COTTONY-MAPLE SCALE (Pulvinaria innumerabilis) found in abundance on several hosts in the Missoula area.

Insects of Stored Food and Household: BOOK LICE (Psocidae) have been very abundant during the last two years in grain bins, especially during the early part of the storage season. In general, insects attacking stored grain have not been too troublesome although scattered infestations of the following have been reported: GRANARY WEEVIL (Sitophilus granarius), INDIAN-MEAL MOTH (Plodia interpuntella), MEALWORM (Tenebrio molitor), confused flour beetle (Tribolium confusum), RED FLOUR BEETLE (T. castaneum), MEDITERRANEAN FLOUR MOTH (Anagasta kuhniella), A GRAIN BEETLE (Laemophloeus sp.) and SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis). TERMITES (Reticulitermes sp.) appeared to be building up in many areas of the State and inquiries during the last two years have been many times those previously experienced. ANTS of various species have caused a good deal of concern in many areas around the State. BED BUGS (Cimex lectularius) are very scarce and only two occurrences were reported. BLACK WIDOW SPIDER (Latrodectus mactans) appears to be about the same as several localities have reported its presence. BOXELDER BUG (Leptocoris trivittatus) was very abundant and caused concern, especially in north central and eastern sections. CAMEL CRICKETS and JERUSALEM CRICKET (Stenopelmatus fuscus) have resulted in many inquires concerning identification and control. CLOVER MITE (Bryobia praetiosa) does not appear to be as abundant as in previous years although a few cases from the central and eastern areas were reported. CLUSTER FLY (Pollenia rudis) has caused considerable concern among housewives, especially in the southern and western areas. DERMESTIDS of various species continue to be the number one household pest and each year bring scores of inquires from areas all over the State. SOLDIER BEETLE LARVAE (Cantharidae) have been reported from several houses throughout the State. These occurrences appear late in the year and are probably the result of these insects taking up winter quarters.

Forest Tree Insects (Reported by P. C. Johnson, Forest Insect Laboratory, Missoula) SPRUCE BEDWORM (Choristoneura fumiferana) caused from light to moderately heavy defoliation on 2,846,000 acres of Douglas-fir forests, exclusive 785,000 acres of budworm-infested forests aerially sprayed with DDT in July. Tree mortality was heavy in spots in reproduction and sapling size trees. Spruce budworm larval feeding in conjuction with that of the black-headed budworm caused significant defoliation of western hemlock trees in northwestern counties. BLACK-HEADED BUDWORM (Acleris variana) larval feeding caused severe defoliation and some tree mortality on 32,000 acres of western hemlock forests. Control measures employing aerial DDT spraying were applied to 6,500 acres of infestation in Glacier National Park. Natural control appeared effective in the remaining infested acres during late summer. The first Montana infestation of the DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) reported in 1956 was completely controlled by natural factors and caused no damage in 1957. A BUD MOTH (Zeiraphera griseana) caused extensive defoliation of western larch forests for the second year. Approximately 125,000 acres of mature larch stands are infested in western Montana. Bud moth feeding caused at least a 50 percent reduction in usable leaf surface of infested trees in 1957. Bud moth damage of this magnitude has not previously occurred in the State. A LOOPER (Semiothisa sexmaculata) continues to cause defoliation in western larch forests since its initial outbreak discovery in 1955. Injury to foliage was negligible except in a few heavily infested areas. LARCH SAWFLIES (Anoplonyx occidens and A. laricivorus) were observed in association with those of the larch looper throughout the range of western larch, the host tree in Montana. The amount of visible damage to the foliage as a result of their feeding appeared slight. A FOLIAGE MOTH (Dioryctria spp.) has caused extensive defoliation of Douglas-fir through central Montana in conjunction with feeding of the spruce budworm on the same trees. HEMLOCK SAWFLY (Neodiprion tsugae) infestations have been intermingled with those of the black-headed budworm to cause considerable defoliation of western hemlock forest trees in northwestern Montana. A SAWFLY (Xyela sp.) was reported feeding on ponderosa pine flowers near Kalispell. COOLEY SPRUCE GALL APHID (Chermes cooleyi) - High endemic infestations were reported in Douglas-fir Christmas tree stands in the northwest. The infestations are associated with severe infections of the

Douglas-fir needle blight (*Rhabdocline pseudotsugae*). SPRUCE SPIDER MITE (*Oligonychus ununguis*) was very severe and widespread infestations appeared in 1957 on 800,000 acres of Douglas-fir forests. The infestations are believed to to be related to the use of aerial DDT insecticides used in these same areas in 1956 to control epidemic infestations of spruce budworm. The infestations were also favored by hot dry weather during the early summer. A MITE (*Pentamerismus erythreus*) caused serious browning of native juniper trees in central Montana. A FIR ENGRAVER (*Scolytus subscaber*) caused visible twig injury to several hundred acres of alpine fire near Lincoln. WESTERN PINE BEETLE (*Dendroctonus brevicomis*) mortality of ponderosa pine trees remained at a low endemic level; infested trees occurred widely scattered throughout mature pine stands. MOUNTAIN PINE BEETLE (*D. monticolae*) - An active infestation in lodgepole pine stands in Glacier National Park caused the death of 1,608 trees on 300 acres in 1957. The infestation has continued at a high level in this area for the past 4 years. Only scattered single mature trees have been killed by the beetle in ponderosa pine forests immediately west of the Continental Divide. DOUGLAS-FIR BEETLE (*D. pseudotsugae*) - Approximately 25 percent of the mature overstory trees on 1,000 acres in Yellowstone National Park was killed during the past three years. The beetle-infested trees were previously heavily defoliated by the spruce budworm in 1953-55. The area was treated with a DDT aerial spray for budworm control in 1955. ENGELMANN SPRUCE BEETLE (*D. engelmanni*) - Remnants of the 1952-56 epidemic outbreak continue in northwestern Montana. The infestation is gradually killing the remaining mature spruce in the drainage bottoms despite logging measures to remove the infested trees as a control device. Approximately 100 million board feet of mature spruce timber was killed in 1957. IPS ENGRAVER BEETLES (*Ips* spp.) - Scattered small infestations in ponderosa and western white pine stands were noted but damage was insignificant. WESTERN PINE TIP MOTH (*Rhyacionia frustrana bushnelli*) caused flagging of ponderosa pine foliage near Ekalaka, and PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) was frequently reported during the year on ponderosa plantings.

MORMON CRICKET ADULT SURVEY - FALL 1957

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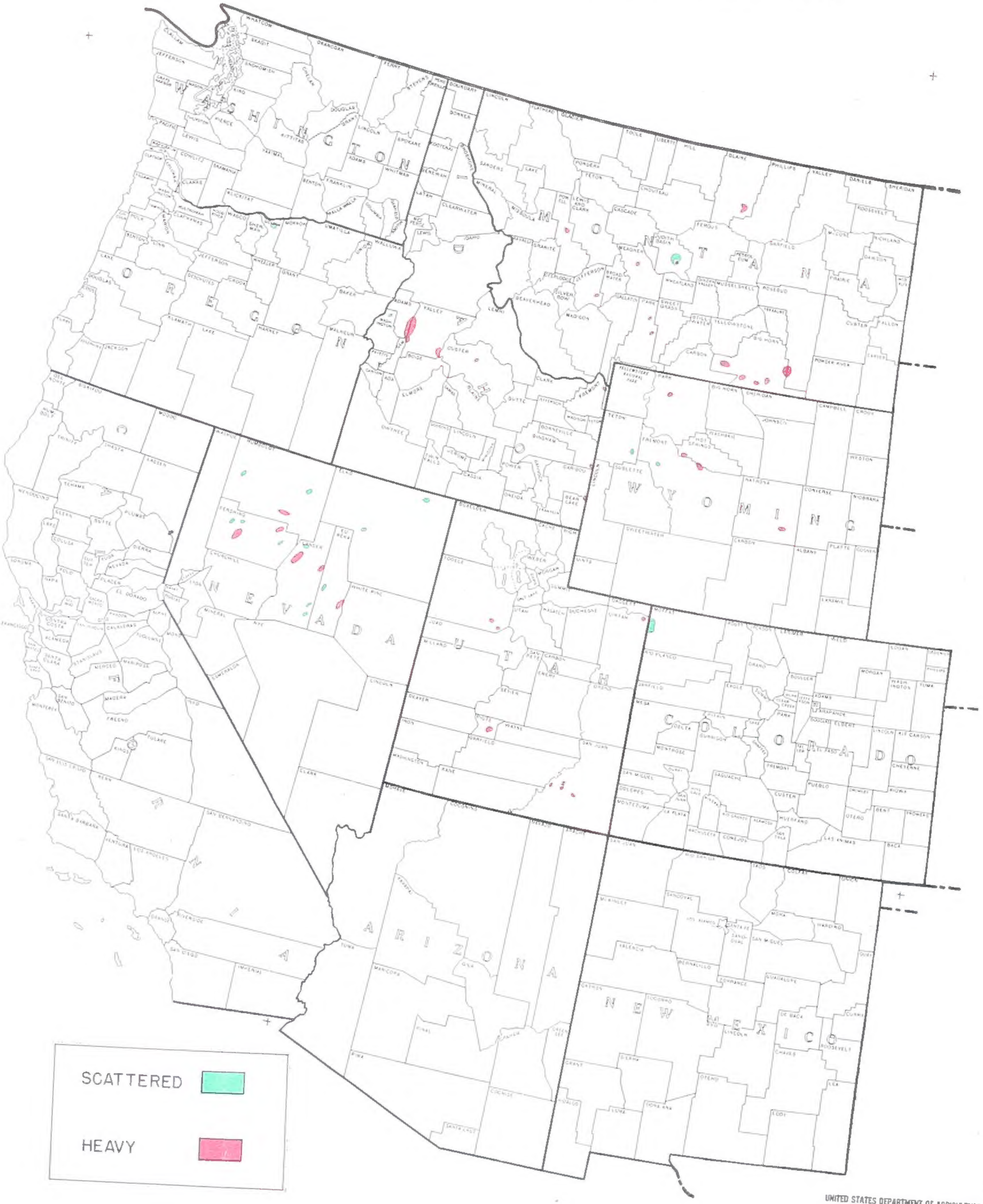

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